REMARKS

This Amendment is filed in response to the Office Action mailed on March 6, 2006. All objections and rejections are respectfully traversed.

Claims 1-5, 7, and 10-53 are currently pending.

Claims 22 to 53 are added to better claim the invention.

Request for Interview

The Applicant respectfully requests a telephonic interview with the Examiner after the Examiner has had an opportunity to consider this Amendment, but before the issuance of the next Office Action. The Applicant may be reached at 617-951-3067.

Claim Objections

At page 2 of the Office Action, claims 1, 10, and 20 were objected to for informalities.

Claims 1, 10, and 20 are amended and overcome the objection.

Claim Rejections – 35 USC § 102

At page 2 of the Office Action, claims 1-21 were rejected under 35 U.S.C. §102 as being anticipated by Clark et al., US Patent No. 4,761,785, hereinafter Clark.

The present invention, as set forth in representative claim 1, comprises in part:

> 1. A method for distributing parity blocks across a disk array, the method comprising the steps of:

adding a new disk to a number of pre-existing disks of the array;
dividing each disk into blocks, the blocks being organized into stripes such that each stripe contains one block from each disk; and
distributing parity among blocks of the new and pre-existing disks by moving every Nth parity block to the new disk to arrange each disk of the array with approximately 1/N parity blocks, where N is equal to the number of pre-existing disks plus the new disk.

By way of background, Clark discloses a storage management mechanism for storing data blocks equally across a set of storage devices (N units). Each unit is divided into equal sized blocks. A stripe is stored across the set of storage devices with a block of parity stored on one unit of the set. Additional stripes store parity in a rotating pattern across the units in the set of storage devices. (Fig. 2). As data is changed in the stripe, a new parity block is stored for that version on the particular unit of that stripe storing parity. When a new unit is added, parity blocks of an existing set are redistributed to include the new unit, but the pattern created does not have to be maintained because the parity does not have to move to the new disk. The changes to parity are completed by changing the control blocks. The control blocks identify which unit of the set contains the storage block for each stripe.

Applicant respectfully urges that Clark does not disclose Applicant's claimed novel step of ***distributing parity among blocks of the new and pre-existing disks by moving every Nth parity block to the new disk to arrange each disk of the array with approximately 1/N parity blocks, where N is equal to the number of pre-existing disks plus the new disk.*** In further detail, Applicant's invention organizes the parity on the disk with 1/N parity blocks per disk, where N is equal to the number of disks in the array.

The parity does not have to be rotated through the disks as in RAID 5 or Fig. 2 of Clark. Applicant's invention stores the parity in a deterministic order but appears random in a repeat interval due to the operation of Applicant's algorithm for moving parity, as shown in Applicant's Fig. 2. For an array with four disks, the pattern does not have to repeat after every 4th stripe as in RAID 5 or Clark (Fig. 2) but repeats after every 12th stripe (see fig. 4 for repeat interval). When a new disk is added, ***every Nth parity block*** is moved from the existing disk(s) to the new disk till there is approximately 1/N parity per disk. After the parity is reassigned and moved there is approximately 1/N parity per disk (depending on number of stripes completed).

Applicant respectfully urges that Clark is silent concerning ***moving every Nth parity block to the new disk to arrange each disk of the array with approximately 1/N parity blocks*** because Clark does not disclose which parity blocks are moved to the new disk. Additionally, Clark discloses not moving parity to an added disk and the disk still being protected by the parity. Furthermore, Clark does not maintain an approximately equal number of parity per a disk in a repeat interval because Clark allows data that is not important to be stored without parity.

Furthermore, Applicant's invention creates a system and method to move parity blocks with recalculating parity blocks and moving data.

Additionally, there is no limit to the number of disks in Applicant's expanded array. Plus, Applicant's invention can add multiple disks at one time and move every Nth parity block to arrange 1/N parity blocks per disk including the multiple disks added. One advantage of Applicant's invention is that it can move parity blocks across multiple

new disks without intermediary steps such as adding each disk and moving parity, then adding another disk and moving parity, and so on.

Accordingly, Applicant respectfully urges that the Clark patent is legally precluded from anticipating the claimed invention under 35 U.S.C. §102 because of the absence from the Clark patent of Applicant's novel step of ***distributing parity among blocks of the new and pre-existing disks by moving every Nth parity block to the new disk to arrange each disk of the array with approximately 1/N parity blocks, where N is equal to the number of pre-existing disks plus the new disk.***

All independent claims are believed to be in condition for allowance.

All dependent claims are believed to be dependent from allowable independent claims, and therefore in condition for allowance.

Favorable action is respectfully solicited.

Please charge any additional fee occasioned by this paper to our Deposit Account No. 03-1237.

Respectfully submitted,

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